

## SECTION: MOLECULAR BIOLOGY

### INVOLVEMENT OF *PSEUDOMONAS AERUGINOSA* ALGZ IN THE REGULATION OF BIOFILM DEVELOPMENT

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*Pseudomonas aeruginosa* is a gram negative opportunistic pathogen that forms biofilms that allow it to establish chronic infections. It is a major pathogen in the lungs of cystic fibrosis patients, which frequently die due to respiratory failure. AlgZ was identified as a regulator of alginate biosynthesis, and twitching motility. This investigation focuses on the phenotype of an *algZ* deletion strain with regard to biofilm development and the identification of genes regulated by AlgZ. In order to study biofilm formation, wild type PAO1, a mutant with AlgZ deletion- (WFPA205) and a complemented strain- (WFPA203) were assayed. These strains were inoculated in LB broth in 96 well plates. In two days the plates were washed with normal saline, and stained with a LIVE/DEAD BacLight bacterial viability stain. Images were acquired via a Zeiss LSM 510 laser scanning confocal microscope. All three strains formed dense biofilms, but the *algZ* deletion biofilms exhibited a lack of viability. This lack of viability was not due to a growth defect of this strain. In order to determine genes that are under AlgZ control, two-dimensional electrophoresis of protein extracts from the wild type strain and the isogenic *algZ* deletion mutant were compared. Immobiline Dry strips (Amersham) were used for separation of proteins in the first dimension. The strips were equilibrated in SDS-PAGE buffer and separated by 12% SDS-Page gel in the second dimension. Nine proteins were expressed more highly in the wild type as compared with the *algZ* deletion strain on a consistent basis. Current investigation focuses on MALDI-TOF Mass Spectrometric Protein Analyses to identify these proteins that may be regulated by AlgZ.